CLAIMS

What is claimed is:

- 1. An isolated nucleic acid molecule comprising a nucleic acid having a nucleotide sequence which encodes an amino acid sequence exhibiting at least 40% sequence identity to an amino acid sequence encoded by
- (a) a nucleotide sequence described in Table 1 or a fragment thereof; or a complement of a nucleotide sequence shown in Table 1 or a fragment thereof.
 - 2. An isolated nucleic acid molecule comprising a nucleic acid having a nucleotide sequence which exhibits at least 65% sequence identity to
 - (a) a nucleotide sequence shown in Table 1 or a fragment thereof; or
 - (b) a complement of a nucleotide sequence described in Table 1 or a fragment thereof.
 - 3. An isolated nucleic acid molecule comprising a nucleic acid having a nucleotide sequence which exhibits at least 65% sequence identity to a gene comprising
 - (a) a nucleotide sequence shown in Table 1 or a fragment thereof; or
 - (b) a complement of a nucleotide sequence described in Table 1 or a fragment thereof.
 - 4. An isolated nucleic acid molecule which is the reverse of the isolated nucleotide sequence according to claim 1, such that the reverse nucleotide sequence has a sequence order which is the reverse of the sequence order of said isolated nucleotide sequence according to claim 1.
 - 5. An isolated nucleic acid molecule comprising a nucleic acid capable of hybridizing to a nucleic acid having a sequence selected from the group consisting of:
 - (a) a nucleotide sequence which is shown in Table 1; and
 - (b) a nucleotide sequence which is complementary to a nucleotide sequence shown in Table 1;

under conditions that permit formation of a nucleic acid duplex at a temperature from about 40°C and 48°C below the melting temperature of the nucleic acid duplex.

6. The nucleic acid molecule according to claim 1, wherein said nucleic acid comprises an open reading frame.

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- 7. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid is capable of functioning as a promoter, a 3' end termination sequence, an untranslated region (UTR), or as a regulatory sequence.
- 8. The isolated nucleic acid molecule of claim 7, wherein said nucleic acid is a promoter and comprises a sequence selected from the group consisting of a TATA box sequence, a CAAT box sequence, a motif of GCAATCG or any transcription-factor binding sequence, and any combination thereof.
- 9. The isolated nucleic acid molecule of claim 7, wherein the nucleic acid sequence is a regulatory sequence which is capable of promoting seed-specific expression, embryo-specific expression, ovule-specific expression, tapetum-specific expression or root-specific expression of a sequence or any combination thereof.
- 10. A vector construct comprising a nucleic acid molecule according to claim 1, wherein said nucleic acid molecule is heterologous to any element in said vector construct.
 - 11. A vector construct comprising:
 - (a) a first nucleic acid having a regulatory sequence capable of causing transcription and/or translation; and
 - (b) a second nucleic acid having the sequence of the isolated nucleic acid molecule according to claim 1;

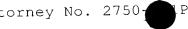
wherein said first and second nucleic acids are operably linked and wherein said second nucleic acid is heterologous to any element in said vector construct.

- 12. The vector construct according to claim 11, wherein said first nucleic acid is native to said second nucleic acid.
- 13. The vector construct according to claim 11, wherein said first nucleic acid is heterologous to said second nucleic acid.
 - 14. A vector construct comprising:
 - (c) a first nucleic acid having the sequence of the isolated nucleic acid molecule according to claim 7; and
 - (d) a second nucleic acid;
- wherein said first and second nucleic acids are operably linked and wherein said first nucleic acid is heterologous to any element in said vector construct.
 - 15. The vector construct according to claim 14, wherein said first nucleic acid is native to said second nucleic acid.
 - 16. The vector construct according to claim 14, wherein said first nucleic acid is heterologous to said second nucleic acid.



- A host cell comprising an isolated nucleic acid molecule according to claim 1, 17. wherein said nucleic acid molecule is flanked by exogenous sequence.
 - A host cell comprising a vector construct of claim 10. 18.
 - A host cell comprising a vector construct of claim 11. 19.
 - A host cell comprising a vector construct of claim 12. 20.
 - A host cell comprising a vector construct of claim 13. 21.
 - A host cell comprising a vector construct of claim 14. 22.
 - A host cell comprising a vector construct of claim 15. 23.
 - 24. A host cell comprising a vector construct of claim 16.
 - An isolated polypeptide comprising an amino acid sequence 25.
 - exhibiting at least 40% sequence identity of an amino acid sequence encoded (a) by a sequence shown in Table 1 or a fragment thereof; and
 - capable of exhibiting at least one of the biological activities of the polypeptide (b) encoded by said nucleotide sequence shown in Table 1 or a fragment thereof.
 - The isolated polypeptide of claim 25, wherein said amino acid sequence 26. exhibits at least 75% sequence identity to an amino acid sequence encoded by a sequence shown in Table 1 or a fragment thereof.
 - The isolated polypeptide of claim 25, wherein said amino acid sequence 27. exhibits at least 85% sequence identity to an amino acid sequence encoded by a sequence shown in Table 1 or a fragment thereof.
 - The isolated polypeptide of claim 25, wherein said amino acid sequence 28. exhibits at least 90% sequence identity to an amino acid sequence encoded by a sequence shown in Table 1 or a fragment thereof.
 - An antibody capable of binding the isolated polypeptide of claim 25. 29.
 - A method of introducing an isolated nucleic acid into a host cell comprising: 30.
 - (a) providing an isolated nucleic acid molecule according to claim 1; and
 - (b) contacting said isolated nucleic with said host cell under conditions that permit insertion of said nucleic acid into said host cell.
 - A method of transforming a host cell which comprises contacting a host cell 31. with a vector construct according to claim 10.
 - A method of transforming a host cell which comprises contacting a host cell 32. with a vector construct according to claim 11.
 - A method of transforming a host cell which comprises contacting a host cell 33. with a vector construct according to claim 12.

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- A method of transforming a host cell which comprises contacting a host cell 34. with a vector construct according to claim 13.
- A method of transforming a host cell which comprises contacting a host cell 35. with a vector construct according to claim 14.
- A method of transforming a host cell which comprises contacting a host cell 36. with a vector construct according to claim 15.
- A method of transforming a host cell which comprises contacting a host cell 37. with a vector construct according to claim 16.
- A method of modulating transcription and/or translation of a nucleic acid in a 38. host cell comprising:
 - (a) providing the host cell of claim 17; and
 - (b) culturing said host cell under conditions that permit transcription or translation.
- A method for detecting a nucleic acid in a sample which comprises: 39.
 - (a) providing an isolated nucleic acid molecule according to claim 1;
 - (b) contacting said isolated nucleic acid molecule with a sample under conditions which permit a comparison of the sequence of said isolated nucleic acid molecule with the sequence of DNA in said sample; and
 - (c) analyzing the result of said comparison.
- The method according to claim 39, wherein said isolated nucleic acid 40. molecule and said sample are contacted under conditions which permit the formation of a duplex between complementary nucleic acid sequences.
- A plant or cell of a plant which comprises a nucleic acid molecule according 41. to claim 1 which is exogenous to said plant or plant cell.
 - A plant or cell of a plant which comprises a nucleic acid molecule according to claim 1, wherein said nucleic acid molecule is heterologous to said plant or said cell of a plant.
- A plant or cell of a plant which has been transformed with a nucleic acid 43. molecule according to claim 1.
- A plant or cell of a plant which comprises a vector construct according to 44. claim 10.
 - A plant or cell of a plant which has been transformed with a vector construct 45. according to claim 10.
 - A plant which has been regenerated from a plant cell according to claim 41. 46.

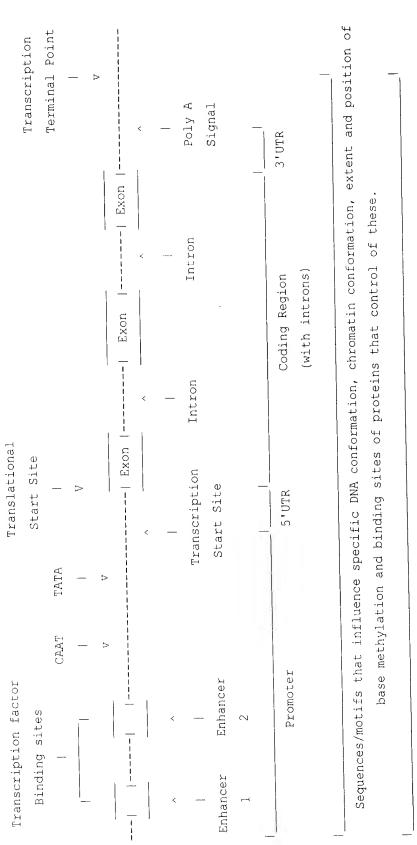


- 47. A plant which has been regenerated from a plant cell according to claim 42.
- 48. A plant which has been regenerated from a plant cell according to claim 43.
- 49. A plant which has been regenerated from a plant cell according to claim 44.
- 50. A plant which has been regenerated from a plant cell according to claim 45.

SCHEMATIC 1

SCHEMATIC OF A GENE

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Gene